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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,074	03/30/2004	Koji Shirakawa	Q80838	3020
65565 7590 02/23/2007 SUGHRUE-265550 2100 PENNSYLVANIA AVE. NW WASHINGTON, DC 20037-3213			EXAMINER LEE, SIN J	
			ART UNIT 1752	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/23/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/812,074

Applicant(s)

SHIRAKAWA ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 11 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. In view of applicants' argument, previous 102(b) rejection on claims 1-10, 13 and 14 over Nishiyama et al'718 is hereby withdrawn.

***Claim Rejections - 35 USC § 103***

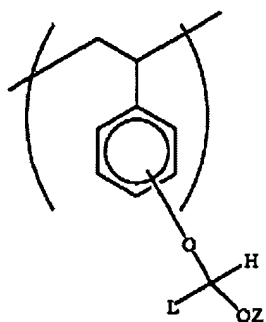
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as obvious over Nishiyama et al (US 6,537,718 B2).

Nishiyama teaches (see claims 1 and 3) a positive photoresist composition containing a photoacid generator and a resin, which is described in his claim 3 which is shown below.

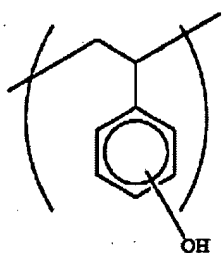
3. The positive photoresist composition for exposure to a far ultraviolet ray as claimed in claim 1, wherein the resin (B) contains a repeating unit represented by formula (IV) shown below and a repeating unit represented by formula (V) shown below:

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(iv)

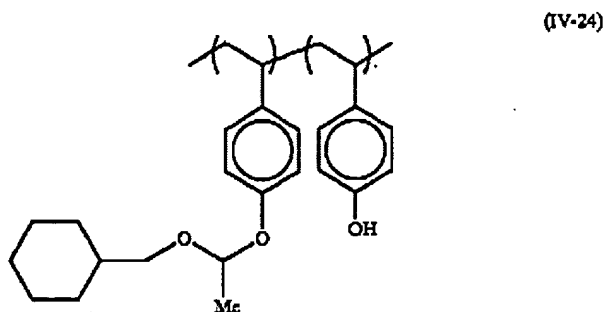
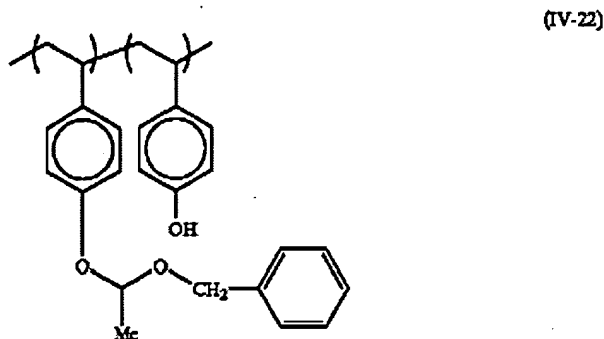


(v)



wherein L represents a hydrogen atom, a straight-chain, branched chain or cyclic alkyl group which may be substituted or an aralkyl group which may be substituted; Z represents a straight-chain, branched chain or cyclic alkyl group which may be substituted or an aralkyl group which may be substituted; or Z and L may be combined with each other to form a 5-membered or 6-membered ring.

Among the examples for such resin (B), Nishiyama discloses (see col.29) following two:



Both of these resins include preset acid-decomposable group (X) of claim 1. Nishiyama coats his photoresist composition onto a substrate, exposes the coated substrate to the exposure light such as X ray or an electron beam and then develops the exposed photoresist film to obtain a resist pattern (see col.42, lines 53-64). It would have been obvious to one skilled in the art to choose resin (IV-22) and (IV-24) as Nishiyama's resin (B) with a reasonable expectation of obtaining a positive photoresist composition, which is improved in line edge roughness and micro grain and is excellent in uniformity of coating on a substrate. Also, since Nishiyama's range (2,000 to 300,000) for the wt. average Mw of his resin overlaps with present range of "not more than 5,000, the prior art's range would have made present range prima facie obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected

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results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Nishiyama also teaches (col.24, lines 61-65) that the molar ratio of the repeating unit of the formula (IV) to the repeating unit of the formula (V) present in his resin is *more preferably* from **10/90** to **40/60**, and thus, the prior art's teaching meets present limitation as to the amount of the acid decomposable group being not more than 40%. Thus, Nishiyama's teaching renders obvious present inventions of claims 1-10, 13 and 14.

#### ***Allowable Subject Matter***

4. Claims 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Nishiyama does not teach or suggest present Z group of claim 11 which has R5 substituent.

#### ***Response to Arguments***

5. Supplemental Declaration by Shirakawa was carefully considered but was found to be unpersuasive. The declaration states that making a rectangular profile is a significant effect because deterioration in device performance may occur due to a tapered profile shape (in fact, it is the Examiner's belief that everyone skilled in the art already knows this). However, Shirakawa's previous Declaration merely records pattern profile results as "slight taper" vs. "rectangle", which are relative terms (without any actual measurement of degree of taperness). By "rectangle", do they mean exactly 90°? By "slight taper", do they mean 89.9° or 80° or 70°? In order to evaluate whether the difference in terms of pattern profile between present invention and Nishiyama, one first needs to know what exactly the degree of difference is. Also, it is not clear from previous declaration what the resin B-5' and resin B-5" exactly are (the declaration

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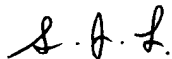
simply says that those resins were prepared respectively based on the working examples of the present invention, but it never defines or shows the structure of those resins), and thus there is now way of knowing whether the comparison made was legitimate.

For those reasons, present 103(a) rejection over Nishiyama et al'718 still stands.

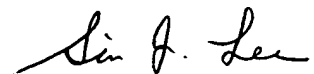
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee  
February 20, 2007



SIN LEE  
PRIMARY EXAMINER